

-- 26. A semiconductor device, comprising:

✓ a substrate having a main surface and a back surface, the back surface having a central area, an intermediate area surrounding the central area and a peripheral area surrounding the intermediate area;

a semiconductor chip disposed on the main surface;

a first bump unit disposed in the central area of the back surface to radiate heat from the semiconductor device, the first bump unit including a plurality of bumps disposed a first distance apart from each other; and

a second bump unit formed in the peripheral area of the back surface for transmitting signals, the second bump unit including a plurality of bumps disposed a second distance apart from each other, the second distance being greater than the first distance and less than a third distance between the central area and the peripheral area,

wherein the first and second distances are set such that upon application of a heat treatment to the device, the bumps of the first bump unit melt so as to become connected and fuse to each other as a unitary body and the bumps of the second bump unit melt and remain apart from each other.

27. The semiconductor device according to claim 26, wherein the bumps of the first and second bump units are formed of solder.

28. A semiconductor device, comprising:

a substrate having a main surface and a back surface, the back surface having a central area, an intermediate area surrounding the central area and a peripheral area surrounding the intermediate area;

a semiconductor chip disposed on the main surface;

a first bump unit disposed in the central area of the back surface to radiate heat from the semiconductor device, the first bump unit including a plurality of bumps disposed a first distance apart from each other; and

a second bump unit formed in the peripheral area of the back surface for transmitting signals, the second bump unit including a plurality of bumps disposed a second distance apart from each other sufficient to assure that upon application of a heat treatment to the device causing the bumps of the first and second bump units to melt, the bumps of the first bump unit remain apart from each other, the second distance being greater than the first distance and less than a third distance between the central area and the peripheral area,

wherein the bumps of the first bump unit are sufficiently close to each other that upon the application of the heat treatment to the device, the bumps of the first bump unit fuse into a unitary body.

29. The semiconductor device according to claim 26, wherein the bumps of the first and second bump units are formed of solder. --